UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/844,700	04/27/2001	Arun Shah	68110328.710	9543

23562 7590 04/07/2004

BAKER & MCKENZIE
PATENT DEPARTMENT
2001 ROSS AVENUE
SUITE 2300
DALLAS, TX 75201

EXAMINER	
HWANG, JOON H	

ART UNIT	PAPER NUMBER
2172	

DATE MAILED: 04/07/2004

17

Please find below and/or attached an Office communication concerning this application or proceeding.

1

Office Action Summary	Application No.	Applicant(s)	
	09/844,700	SHAH ET AL.	
	Examiner	Art Unit	
	Joon H. Hwang	2172	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 January 2004* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-6 and 8-16* is/are pending in the application.

4a) Of the above claim(s) *2 and 7* is/are ~~withdrawn from consideration~~ canceled.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-6 and 8-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *12* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1. The applicants amended claims 1, 3-6, 8-12, and14-16 and canceled claims 2 and 7 in the amendment received on 1/14/04.

The pending claims are 1, 3-6, and 8-16.

Response to Arguments

2. Applicant's arguments filed in the amendment received on 1/14/04 have been fully considered but they are not persuasive.

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Weissman discloses a datamart comprising star schemas, wherein the datamart is queried. Weissman teaches analysis of a query (lines 57-65 in col. 15 and lines 15-27 and 39-48 in col. 27) for faster data processing, wherein the analysis of the query involves with selecting the best sources (aggregates) to use. Rogers also discloses a system comprising a star schema, wherein the system is also queried. Rogers discloses analyzing a query, wherein the analysis of the query involves with completing a matrix that is for selecting sources that have the lowest cost for aggregate "on-the-fly" (lines

26-27 in col. 6 and lines 5-17 in col. 2). Rogers also discloses the query analysis involves with a level aggregation (lines 41-64 in col. 4), which Weissman does not explicitly disclose. Therefore, based on Weissman in view of Rogers, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the teachings of Rogers to the system of Weissman for considering a level aggregation in a query analysis in order to select sources (aggregates) that have the lowest cost for aggregates, thereby the query process is optimized. The applicants argument, "aggregate data 'on the fly' without maintaining a database of appropriate partitions to aggregate form", is nothing to do with "the datamart operate in a consistent manner" of Weissman, since the consistent manner of Weissman is with regard to the consistency of a query result.

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). Weissman requires indications of a level aggregation (fig. 31) for data analysis, executing a query, or reporting. Rogers uses levels of aggregation in a query analysis, which teaches the levels of aggregation are used in the query processing. Therefore, the applicants' argument is not persuasive.

Applicants argue that Weissman does not teach 'levels of dimension'. However, the examiner respectfully traverses. Weissman teaches levels of dimension. For example, Weissman shows a date dimension table in fig. 11 that comprises levels based on intervals, such as weekly, monthly, and yearly (lines 32-56 in col. 30). For the sake of the argument, Rogers discloses levels of dimension in fig. 2 for faster query processing. It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the teachings of Rogers to the system of Weissman for more detailed data analysis.

Applicants argue that Weissman does not disclose, suggest, or teach stargroups associated with a measure. However, the examiner respectfully traverses. Weissman discloses a constellation as "a grouping of dimension definitions, fact definitions, like-structured facts (all facts in a constellation have the same dimensional foreign keys), or stars, and other metadata definitions" (lines 12-16 in col. 6), wherein the fact table for fact definition is "the central table of a star schema and stores the numeric measurements of business that is supplying the information to the datamart" (lines 17-19 in col. 6). Weissman also discloses the constellation instances are defined by defining aggregates, dimensions, facts, measures, and ticksheets (lines 66-67 in col. 17). Weissman discloses the constellation key points to the constellation in which the measure resides (lines 20-30 in col. 33). Weissman also shows measures associated with a constellation (fig. 7), wherein there can be a plurality of constellations. Therefore, Weissman teaches stargroups (constellations) associated with a measure.

In response to applicant's arguments, the recitation of the dimension indicators associated with a particular dimension and each dimension indicator indicating a level of aggregation of at least one associated aggregated fact table comprising aggregated facts with respect to the particular dimension has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1, 3-6, and 8-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weissman et al. (U.S. Patent No. 6,212,524) in view of Rogers (U.S. Patent No. 6,212,515).

With respect to claim 1, Weissman discloses calculating a measure in a database having a plurality of stars (aggregate tables, lines 9-20 in col. 8 and lines 38-48 in col. 5). Weissman discloses a star schema comprising a fact table and a table for

each supported dimension (lines 26-39 in col. 2). Weissman discloses metadata for a hierarchy of a dimension for dimension columns, which teaches levels of the dimension (line 23 in col. 28 thru line 8 in col. 29). Weissman discloses selecting a constellation (a stargroup) associated with the measure, wherein the constellation (the stargroup) comprising one or more stars (aggregates) comprising a set of dimension indicators associated with levels of aggregation (fig. 7, fig. 30, lines 36-40 in col. 3, lines 9-26 in col. 14, lines 15-42 in col. 31, lines 20-63 in col. 33, lines 19-54 in col. 35, line 24 in col. 13 thru line 56 in col. 16, lines 25-48 in col. 17, lines 14-67 in col. 27, and line 65 in col. 28 thru line 8 in col. 29). Weissman discloses selecting a particular star (an aggregate) of the one or more stars (aggregates) and querying the tables comprising facts (lines 38-67 in col. 5, lines 14-55 in col. 27, fig. 34, and fig. 36). Weissman does not explicitly disclose an indication of a level of aggregation. However, Rogers further discloses a physical partition (an aggregate table) containing levels of each dimension, which are aggregated (lines 1-25 in col. 3) for selecting an appropriate aggregate fact table. This teaches an indication of a level of aggregation. Roger also discloses comparing one or more dimension levels to one or more requested levels (lines 21-41 in col. 4 and fig. 2) in order to select an appropriate aggregate fact table. Therefore, based on Weissman in view of Rogers, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Weissman with the teaching of Rogers in order to select an appropriate aggregate fact table for the querying.

With respect to claim 3, Weissman teaches successively comparing each of the stars (aggregates) associated with tables of aggregated facts of successively lower

aggregation (lines 15-55 in col. 27) in order to determine which aggregate most closely suits a particular query. The limitations of claim 3 are rejected in the analysis of claim 1 above, and the claim is rejected on that basis.

With respect to claim 4, Roger further discloses selecting the particular aggregate table (the star) wherein each of the dimension levels is equal to or exceed each of the requested levels (abstract, lines 46-64 in col. 4, and lines 5-41 in col. 2) in order to select an appropriate aggregate fact table. Therefore, the limitations of claim 4 are rejected in the analysis of claim 1 above, and the claim is rejected on that basis.

With respect to claim 5, Weissman discloses query mechanism metadata for a query interface to receive a request for calculating a metric (an aggregate query), wherein the request to calculate a metric is associated with levels of dimensions and retrieving a metric definition associated with the metric, wherein the metric definition comprises the measure (line 15 in col. 31 thru line 16 in col. 35 and figs. 30-35).

Claims 6 and 8-10 are essentially the same as claims 1-5 except that it sets forth the claimed invention as a computer-readable medium rather than a method and rejected for the same reasons as applied hereinabove.

With respect to claim 11, Weissman discloses a memory means for storing data (lines 37-46 in col. 6). Weissman discloses storing a name and key of an aggregate, teaching a star identifier identifying a star (an aggregate) associated with a particular fact table (fig. 3 and line 54 in col. 15 thru line 56 in col. 16). Roger further discloses a dimension hierarchy for each dimension could be represented as an array (lines 42-46

in col. 4). Therefore, the limitations of claim 11 are rejected in the analysis of claim 1 above, and the claim is rejected on that basis.

With respect to claim 12, Rogers further discloses a physical partition (an aggregate table) containing levels of each dimension, which are aggregated (lines 1-25 in col. 3) for selecting an appropriate aggregate fact table. Therefore, the limitations of claim 12 are rejected in the analysis of claim 11, and the claim is rejected on that basis.

With respect to claim 13, Roger further discloses an indication of a particular level of a dimension, which teaches a dimension indicator (lines 3-25 in col. 3) for selecting an appropriate aggregate fact table. Therefore, the limitations of claim 13 are rejected in the analysis of claim 12, and the claim is rejected on that basis.

With respect to claim 14, Weissman discloses a constellation (a stargroup) associated with the measure, wherein the constellation (the stargroup) comprising one or more stars (aggregates) associated with fact tables (fig. 7, fig. 30, lines 36-40 in col. 3, lines 9-26 in col. 14, lines 15-42 in col. 31, lines 20-63 in col. 33, lines 19-54 in col. 35, line 24 in col. 13 thru line 56 in col. 16, lines 25-48 in col. 17, lines 14-67 in col. 27, and line 65 in col. 28 thru line 8 in col. 29). Roger further discloses a dimension hierarchy for each dimension could be represented as an array (lines 42-46 in col. 4). Therefore, the limitations of claim 14 are rejected in the analysis of claim 11 above, and the claim is rejected on that basis.

With respect to claim 15, Weissman discloses storing stars (aggregates) based on the degree of aggregation of the first aggregate fact tables associated therewith (fig. 7, figs. 13-15, line 52 in col. 15 thru line 56 in col. 16, and fig. 3).

With respect to claim 16, Weissman discloses multiple constellations (multiple stargroups, lines 9-26 in col. 14 and fig. 7). Therefore, the limitations of claim 16 are rejected in the analysis of claim 14 above, and the claim is rejected on that basis.

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joon H. Hwang whose telephone number is 703-305-6469. The examiner can normally be reached on 9:30-6:00(M~F).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, JOHN E BREENE can be reached on 703-305-9790. The fax phone numbers for the organization where this application or proceeding is assigned are (703)

872-9306 for regular communications and (703) 872-9306 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

Joon Hwang
4/3/04

John E. Breene
JOHN BREENE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100